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## RAW SEQUENCE LISTING

DATE: 07/02/2003

PATENT APPLICATION: US/09/920,653B

TIME: 07:16:05

Input Set : N:\DA\PTO.DA.txt

Output Set: N:\CRF4\07012003\I920653B.raw

3 <110> APPLICANT: Japan as Represented by Director General of Okazaki National  
 4 Research  
 5 Institutes  
 7 <120> TITLE OF INVENTION: Nav2 channel gene-deficient non-human animals  
 9 <130> FILE REFERENCE: U2001P059  
 C--> 11 <140> CURRENT APPLICATION NUMBER: US/09/920,653B  
 C--> 12 <141> CURRENT FILING DATE: 2001-08-03  
 14 <150> PRIOR APPLICATION NUMBER: JP 2000/237320  
 15 <151> PRIOR FILING DATE: 2000-08-04  
 17 <150> PRIOR APPLICATION NUMBER: JP 2000/241637  
 18 <151> PRIOR FILING DATE: 2000-08-09  
 20 <150> PRIOR APPLICATION NUMBER: JP 2001/222263  
 21 <151> PRIOR FILING DATE: 2001-07-23  
 23 <160> NUMBER OF SEQ ID NOS: 8  
 25 <170> SOFTWARE: PatentIn Ver. 2.1  
 27 <210> SEQ ID NO: 1  
 28 <211> LENGTH: 446  
 29 <212> TYPE: DNA  
 30 <213> ORGANISM: Rattus norvegicus  
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 35 agccgggata tagaagcagg caaaaaactt ccatttgctt atggaacctt tctcaagga 180  
 36 accgtgtcag agcccttgga agatgtggat ccatactact atgttaagag aaatactttc 240  
 37 atggtcttaa acagaaacag agtcatcttc aggttcaatg cggtttccat cctctgcaag 300  
 38 ttgtctcctt taagctctct cagaagagct gttatcaagg ttttggtgca cccctttttg 360  
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 40 ccggaatgga tattggcagt agagaa 446  
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 45 <212> TYPE: DNA  
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 48 <220> FEATURE:  
 49 <221> NAME/KEY: CDS  
 50 <222> LOCATION: (252)..(5297)  
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 55 tggagctagc ctggtggctg agtgttttagc tgggaagcagc agtggaccgc aaccacattg 120  
 57 caacaacctc cgtagtagag atctgagaag acaagcccag gagagcaaag ggctctcgtg 180  
 59 agccttgcat ctgggggttct tgctggagtt ttagtgaaga ctagcatttg acagcaacta 240  
 61 taaaaccgaa a atg ttg act tcc cca gag ccg aag ggc ctt gtc cca ttt 290  
 62 Met Leu Thr Ser Pro Glu Pro Lys Gly Leu Val Pro Phe  
 63 1 5 10

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66 Thr Thr Glu Ser Leu Glu Leu Ile Glu Asn His Ile Ala Lys Lys Cys
67 15 20 25
69 aat gaa gac ccc gaa gaa gaa gaa ggt tta aaa cca agt cgt aat cta 386
70 Asn Glu Asp Pro Glu Glu Glu Glu Gly Leu Lys Pro Ser Arg Asn Leu
71 30 35 40 45
73 gaa gct ggc aaa aga ctt cca att ccc tat gga acc ctc cct cga gga 434
74 Glu Ala Gly Lys Arg Leu Pro Ile Pro Tyr Gly Thr Leu Pro Arg Gly
75 50 55 60
77 acc gtg tca gag ccc ttg gaa gat gtg gat cca tac tac tat gtt aag 482
78 Thr Val Ser Glu Pro Leu Glu Asp Val Asp Pro Tyr Tyr Tyr Val Lys
79 65 70 75
81 aga aat act ttc atg gtc tta aac aga agc aga gtc atc ttc agg ttc 530
82 Arg Asn Thr Phe Met Val Leu Asn Arg Ser Arg Val Ile Phe Arg Phe
83 80 85 90
85 aat gcg gtt tcc atc ttc tgc aca ttg tct cct cta aac tcc ctc aga 578
86 Asn Ala Val Ser Ile Phe Cys Thr Leu Ser Pro Leu Asn Ser Leu Arg
87 95 100 105
89 aga gca gct atc aag gct ttg gtg cat ccc ctt ttt cgc ctg ctg att 626
90 Arg Ala Ala Ile Lys Ala Leu Val His Pro Leu Phe Arg Leu Leu Ile
91 110 115 120 125
93 tta atc agc gtt ctc act gac agc ata ctt atg tgc atg agt aat cta 674
94 Leu Ile Ser Val Leu Thr Asp Ser Ile Leu Met Cys Met Ser Asn Leu
95 130 135 140
97 cca gaa tgg ata ttg gca ata gag aat act ttg ctt ggg att tac gca 722
98 Pro Glu Trp Ile Leu Ala Ile Glu Asn Thr Leu Leu Gly Ile Tyr Ala
99 145 150 155
101 ttt gaa ata ctt gta aaa gtc att gca aga ggt atc tgg gca ggt tca 770
102 Phe Glu Ile Leu Val Lys Val Ile Ala Arg Gly Ile Trp Ala Gly Ser
103 160 165 170
105 ttt tcc ttc ctt ggg gat ctt tgg aac tgg ctt gat ttc agt gta act 818
106 Phe Ser Phe Leu Gly Asp Leu Trp Asn Trp Leu Asp Phe Ser Val Thr
107 175 180 185
109 ttg ttc gag cta atc aca agg ttt tca cct cta agc tcc ttt tta atg 866
110 Leu Phe Glu Leu Ile Thr Arg Phe Ser Pro Leu Ser Ser Phe Leu Met
111 190 195 200 205
113 ctt aaa act atc aga act ttc cga att ttg aag att atc cct ttg aac 914
114 Leu Lys Thr Ile Arg Thr Phe Arg Ile Leu Lys Ile Ile Pro Leu Asn
115 210 215 220
117 cac ggc ctg cag tct att gtg atg aca ctg gcc cag tgt ttg aag aaa 962
118 His Gly Leu Gln Ser Ile Val Met Thr Leu Ala Gln Cys Leu Lys Lys
119 225 230 235
121 cta ttt ggt gcc att gcc cta gct ctg ttt ttt ctg gct gtg ttt tca 1010
122 Leu Phe Gly Ala Ile Ala Leu Ala Leu Phe Phe Leu Ala Val Phe Ser
123 240 245 250
125 cta ctt gga atg ggc ctc ttc atg ggc aac ctg aag cac aaa tgt ctg 1058
126 Leu Leu Gly Met Gly Leu Phe Met Gly Asn Leu Lys His Lys Cys Leu
127 255 260 265
129 cgg tgg cca gaa gaa aat gaa aat gaa acg ctg cac aac aga act gga 1106

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131	270					275					280					285	
133	agc	ctt	aac	tat	agt	cca	gaa	aga	ata	aac	ttc	tac	tac	atg	gaa	gga	1154
134	Ser	Leu	Asn	Tyr	Ser	Pro	Glu	Arg	Ile	Asn	Phe	Tyr	Tyr	Met	Glu	Gly	
135					290					295					300		
137	gcg	aaa	tat	gct	ctc	ctt	tgc	ggc	aac	agg	aca	gat	gct	ggc	cag	tgt	1202
138	Ala	Lys	Tyr	Ala	Leu	Leu	Cys	Gly	Asn	Arg	Thr	Asp	Ala	Gly	Gln	Cys	
139				305					310					315			
141	ccg	gaa	ggt	tat	gtg	tgt	gta	aaa	gaa	ggc	aca	aat	cct	gac	aat	ggc	1250
142	Pro	Glu	Gly	Tyr	Val	Cys	Val	Lys	Glu	Gly	Thr	Asn	Pro	Asp	Asn	Gly	
143			320					325					330				
145	ttc	aca	agt	ttt	gac	aac	ttt	ggc	tgg	tcc	ctt	ctt	gct	atg	ttt	cga	1298
146	Phe	Thr	Ser	Phe	Asp	Asn	Phe	Gly	Trp	Ser	Leu	Leu	Ala	Met	Phe	Arg	
147		335					340						345				
149	ttg	atg	aca	cag	gat	tac	cct	gaa	tta	ctt	tat	cac	cag	atc	ctt	tat	1346
150	Leu	Met	Thr	Gln	Asp	Tyr	Pro	Glu	Leu	Leu	Tyr	His	Gln	Ile	Leu	Tyr	
151	350					355					360					365	
153	gct	tca	gga	aag	gtc	tac	atg	ata	ttt	ttt	ggt	atg	atc	agt	ttc	tgg	1394
154	Ala	Ser	Gly	Lys	Val	Tyr	Met	Ile	Phe	Phe	Val	Met	Ile	Ser	Phe	Trp	
155				370						375					380		
157	ttt	gcc	ttc	tat	ttg	aca	agt	ttg	ttc	ttg	ggc	ata	ctc	act	atg	acc	1442
158	Phe	Ala	Phe	Tyr	Leu	Thr	Ser	Leu	Phe	Leu	Gly	Ile	Leu	Thr	Met	Thr	
159			385						390					395			
161	tat	gaa	aag	gaa	aag	cag	aga	gcc	tgt	gag	gaa	tct	gga	ggc	ctt	gat	1490
162	Tyr	Glu	Lys	Glu	Lys	Gln	Arg	Ala	Cys	Glu	Glu	Ser	Gly	Gly	Leu	Asp	
163			400					405					410				
165	ccc	aaa	tgt	caa	cag	aca	gtg	aaa	gaa	ctc	gac	gaa	gaa	aat	gac	gca	1538
166	Pro	Lys	Cys	Gln	Gln	Thr	Val	Lys	Glu	Leu	Asp	Glu	Glu	Asn	Asp	Ala	
167		415					420						425				
169	gct	gag	atg	gaa	act	aca	caa	ata	gaa	atg	aag	aaa	aga	tcc	cca	act	1586
170	Ala	Glu	Met	Glu	Thr	Thr	Gln	Ile	Glu	Met	Lys	Lys	Arg	Ser	Pro	Thr	
171	430					435					440					445	
173	tct	ata	aac	acc	aca	ctg	gat	ata	ctg	gaa	gac	act	acc	ctc	gga	cac	1634
174	Ser	Ile	Asn	Thr	Thr	Leu	Asp	Ile	Leu	Glu	Asp	Thr	Thr	Leu	Gly	His	
175				450						455					460		
177	aga	gaa	gaa	cca	gaa	aca	tcc	agg	aag	aaa	tgc	cca	ata	tgt	tgg	cat	1682
178	Arg	Glu	Glu	Pro	Glu	Thr	Ser	Arg	Lys	Lys	Cys	Pro	Ile	Cys	Trp	His	
179			465						470					475			
181	aag	ttt	att	aaa	acc	tgc	ttc	atc	tgg	aaa	tgc	tct	ccc	tgt	tgg	gta	1730
182	Lys	Phe	Ile	Lys	Thr	Cys	Phe	Ile	Trp	Lys	Cys	Ser	Pro	Cys	Trp	Val	
183		480						485					490				
185	aaa	ctg	aac	gag	ttt	gct	gat	aga	gtt	ata	aca	cac	cca	ttg	gct	gat	1778
186	Lys	Leu	Asn	Glu	Phe	Ala	Asp	Arg	Val	Ile	Thr	His	Pro	Leu	Ala	Asp	
187		495					500					505					
189	ctt	ttt	ctt	gtc	atc	tgc	atc	gtt	tta	aac	ata	tgc	ttc	ctc	gcc	cta	1826
190	Leu	Phe	Leu	Val	Ile	Cys	Ile	Val	Leu	Asn	Ile	Cys	Phe	Leu	Ala	Leu	
191	510					515					520				525		
193	gaa	cat	ttt	cca	atg	agc	gag	gag	ctc	agg	tct	ctc	ctt	cac	gtt	gga	1874
194	Glu	His	Phe	Pro	Met	Ser	Glu	Glu	Leu	Arg	Ser	Leu	Leu	His	Val	Gly	

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198	Asn Leu Val Phe Ile Gly Ile Tyr Thr Ile Glu Leu Ile Leu Lys Ile						
199		545		550		555	
201	atc gct atg cat cca tat ggg tat ttt caa ata agc tgg aat att ttt						1970
202	Ile Ala Met His Pro Tyr Gly Tyr Phe Gln Ile Ser Trp Asn Ile Phe						
203		560		565		570	
205	gac agt ata ctt gtg gtt ttg gag tta aca gaa att tta cta gca gat						2018
206	Asp Ser Ile Leu Val Val Leu Glu Leu Thr Glu Ile Leu Leu Ala Asp						
207		575		580		585	
209	gtt gaa gga cta gct gtt tta ata aca gtc cca ttg ata ttt ata aaa						2066
210	Val Glu Gly Leu Ala Val Leu Ile Thr Val Pro Leu Ile Phe Ile Lys						
211	590		595		600	605	
213	ctg ggg aag tac gga cca cca ttt aag agt ttg atg cgc atc ctt ggt						2114
214	Leu Gly Lys Tyr Gly Pro Pro Phe Lys Ser Leu Met Arg Ile Leu Gly						
215		610		615		620	
217	agc tca ttg atg gcc ctg aaa gat ttg gtc ctg ttg ctc tgc ata ttc						2162
218	Ser Ser Leu Met Ala Leu Lys Asp Leu Val Leu Leu Leu Cys Ile Phe						
219		625		630		635	
221	gtt tac ttc tct gct gtg ttc ggc atg aag ctg ttt ggt cga agt tac						2210
222	Val Tyr Phe Ser Ala Val Phe Gly Met Lys Leu Phe Gly Arg Ser Tyr						
223		640		645		650	
225	aag gat tgt gtc tgc cac ata aag gaa gac tgc caa ccc caa cgc tgg						2258
226	Lys Asp Cys Val Cys His Ile Lys Glu Asp Cys Gln Pro Gln Arg Trp						
227		655		660		665	
229	cac atg agt gac ttc ctt cat gcc tac atg acc gtg ttc cga atc ctc						2306
230	His Met Ser Asp Phe Leu His Ala Tyr Met Thr Val Phe Arg Ile Leu						
231	670		675		680	685	
233	tgt gga gag tgg ata gag aca tta tgg gag tgt atg gag gtt gca ggc						2354
234	Cys Gly Glu Trp Ile Glu Thr Leu Trp Glu Cys Met Glu Val Ala Gly						
235		690		695		700	
237	cag gcc tgg tgt att cct ttt tac atg atg gtc att tta att gga aac						2402
238	Gln Ala Trp Cys Ile Pro Phe Tyr Met Met Val Ile Leu Ile Gly Asn						
239		705		710		715	
241	tta ttg ata ctt tac ctc ttt gtg aca ttg gtg agc tct ttc agt tac						2450
242	Leu Leu Ile Leu Tyr Leu Phe Val Thr Leu Val Ser Ser Phe Ser Tyr						
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247		735		740		745	
249	gcc atg gca agg ata aag tcg gga ata aac tcc atg ctt ctt aaa tta						2546
250	Ala Met Ala Arg Ile Lys Ser Gly Ile Asn Ser Met Leu Leu Lys Leu						
251	750		755		760	765	
253	atg tgc aca gaa aga agt gtt cct aca gaa gca aca gac caa ata tgt						2594
254	Met Cys Thr Glu Arg Ser Val Pro Thr Glu Ala Thr Asp Gln Ile Cys						
255		770		775		780	
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258	Asp Pro Ser Val Lys Glu Asn Ile Ser Gly His Thr Leu Ser Glu Leu						
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263      800      805      810
265 gag aaa act cca gtg act gaa tct gag agt caa tct ctg att gct agt 2738
266 Glu Lys Thr Pro Val Thr Glu Ser Glu Ser Gln Ser Leu Ile Ala Ser
267      815      820      825
269 ccc agt gcc tct gaa act gtg ccg att gct tca gga gaa tct gat ata 2786
270 Pro Ser Ala Ser Glu Thr Val Pro Ile Ala Ser Gly Glu Ser Asp Ile
271 830      835      840      845
273 gaa aat ctg gat aac aag gag act cgg agc aag tct ggg aat gga ggc 2834
274 Glu Asn Leu Asp Asn Lys Glu Thr Arg Ser Lys Ser Gly Asn Gly Gly
275      850      855      860
277 agt aaa gag aaa atg aag cag tct agc tca tct gag tgc agc aca gtt 2882
278 Ser Lys Glu Lys Met Lys Gln Ser Ser Ser Ser Glu Cys Ser Thr Val
279      865      870      875
281 gat atc gct att tct gaa gaa gaa gaa atg gtc tat gaa cat gaa aag 2930
282 Asp Ile Ala Ile Ser Glu Glu Glu Glu Met Val Tyr Glu His Glu Lys
283      880      885      890
285 tca aag ctt cat aaa aat ggt tat gaa cgc aaa tct tca act ggt caa 2978
286 Ser Lys Leu His Lys Asn Gly Tyr Glu Arg Lys Ser Ser Thr Gly Gln
287      895      900      905
289 atc agt aga gaa tct agg aat gga aag att tgg aaa aac atc agg aaa 3026
290 Ile Ser Arg Glu Ser Arg Asn Gly Lys Ile Trp Lys Asn Ile Arg Lys
291 910      915      920      925
293 act tgc tgc aag ata gta gag aac agc tgg ttt gag tgt ttc att ggc 3074
294 Thr Cys Cys Lys Ile Val Glu Asn Ser Trp Phe Glu Cys Phe Ile Gly
295      930      935      940
297 ctg gtc act ctg ctc tgc aca ggc act ctg gct ctt gaa gac ata tat 3122
298 Leu Val Thr Leu Leu Cys Thr Gly Thr Leu Ala Leu Glu Asp Ile Tyr
299      945      950      955
301 att gat cag aga aaa acc act aaa atc tta ctg gaa tat gcg gac atg 3170
302 Ile Asp Gln Arg Lys Thr Thr Lys Ile Leu Leu Glu Tyr Ala Asp Met
303      960      965      970
305 ata ttt gca tac atc ttc att ctg gag atg ctt ctc aag tgg gtg gct 3218
306 Ile Phe Ala Tyr Ile Phe Ile Leu Glu Met Leu Leu Lys Trp Val Ala
307      975      980      985
309 tat ggc ttt aaa gcc ttt ttc tcc aac aac tgg tac aaa ctg gac ttt 3266
310 Tyr Gly Phe Lys Ala Phe Phe Ser Asn Asn Trp Tyr Lys Leu Asp Phe
311 990      995      1000      1005
313 atg gtt gtt atc gtg ttt tgt ctt agc tta ata ggc aaa act cga gaa 3314
314 Met Val Val Ile Val Phe Cys Leu Ser Leu Ile Gly Lys Thr Arg Glu
315      1010      1015      1020
317 gat ctg aac cct ctg aca tca ata aag ttc ctt cga gca cta aga gtt 3362
318 Asp Leu Asn Pro Leu Thr Ser Ile Lys Phe Leu Arg Ala Leu Arg Val
319      1025      1030      1035
321 ctg tgc cag ttt gaa aga atg aag gtg gtc ctg aga gct ttg ata aaa 3410
322 Leu Ser Gln Phe Glu Arg Met Lys Val Val Leu Arg Ala Leu Ile Lys
323      1040      1045      1050
325 aca acc tta ccc act gtg agc gtg ttt cta gtc tgc cta atg atc tgg 3458

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VERIFICATION SUMMARY

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L:11 M:270 C: Current Application Number differs, Replaced Application Number

L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date